

Macro Focus

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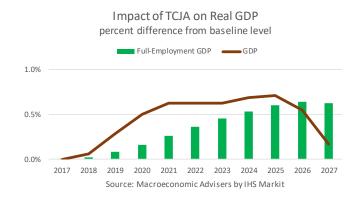
The Macroeconomic Impact of the Tax Cuts and Jobs Act

Executive Summary

On December 22, 2017, President Trump signed into law the Tax Cuts and Jobs Act (TCJA, or "the Act"), the most sweeping re-write of the nation's tax code since the Tax Reform Act of 1986. TCJA slashes individual and business tax rates while broadening the corresponding tax bases. Its cost, before macroeconomic feedback, is roughly \$1.5 trillion over 10 years, a limit set by the Congressional Budget Resolution for fiscal year (FY) 2018. TCJA was passed using a process known as "budget reconciliation" that precluded a Senate filibuster but under which rules tax legislation cannot add to the deficit after 10 years. To satisfy this requirement, most of the individual provisions of TCJA expire in 2026, creating a steep "fiscal cliff" that will present lawmakers with an eventual legislative challenge and raise fiscal policy uncertainty as the cliff's edge is approached.² TCJA will shift the burden of taxation towards the lower end of the income distribution, especially after the individual provisions expire, exacerbating recent trends towards income inequality. It is also a large tax cut enacted with the economy near full employment, inflation rising towards the Federal Reserve's 2% objective, and the Federal Open Market Committee (FOMC) already removing monetary accommodation. This raises the possibility of an unnecessary and illtimed fiscal stimulus, the kind of "policy mistake" that has ended some previous expansions.

Subsequent legislation may extend the individual provisions of TCJA and address other of its shortcomings but, for now, we are left to estimate the impact of the Act, as written, on our forecast for the U.S. economy.³ It is, of course, impossible to model and assess with full confidence all the responses to the myriad complexities of the legislation. Nevertheless, analysis based on both standard economic thought and traditional economic models does allow us to reach tentative conclusions, reported here, about the magnitude, direction, and timing of the major macroeconomic impacts of the

Our analysis suggests that, relative to a "previouspolicy baseline", TCJA will raise the level of real, potential (or "full-employment") GDP roughly 0.6% in 2027, mainly by encouraging an expansion of the domestic capital stock (see chart). This translates into an increase in the growth rate of potential GDP of 0.06 percentage point (or 6 basis points) per year over the coming decade. This result is in line with other estimates from both the private sector and non-partisan government agencies, but stands in sharp contrast to estimates from the



³ The need to stay within the \$1.5 trillion limit established by the Budget Resolution, the pressure to mollify competing constituencies, and the push to pass legislation before the end of last year lead to the inclusion in TCJA of provisions likely to have unintended consequences. Indeed, we expect a "Technical Corrections" tax bill sometime later this year.

Please see the important disclaimer on the last page of this report.



¹The Public law no. 115-97.

²One popular measure of policy uncertainty, by Bloom et. al., includes the present discounted value of expiring tax provisions. (See http://www.policyuncertainty.com/ methodology.html). This will rise monotonically as the fiscal cliff is approached. Elsewhere we have shown that an increase in such uncertainty leads to a widening of credit spreads which, in turn, restrains near-term GDP growth. See "The Cost of Recent Fiscal Policy Uncertainty", Macroeconomic Advisers' Macro Focus (November 6, 2013). The temporary nature of the individual provisions may also mute individuals' responses to the Act while encouraging intertemporal shifts in income and activity that many economists would consider counter-productive.



Trump Administration that are much higher but offered without rigorous supporting analysis. Importantly, such a modest boost to potential growth implies little "dynamic" revenue feedback. Hence, TCJA is likely to lead to significantly higher deficits and debt over the next 10 years, exacerbating the nation's fiscal imbalance that already is unsustainable.

The near-term impact on the level of actual, as opposed to potential, GDP is larger because the tax cuts will boost consumption expenditures even as the incentives for capital formation support additional investment spending. While this stimulus to domestic demand will be partially offset by tighter monetary policy, and the impact on domestic production will be attenuated by "leakage" into imports, we estimate that by 2021 real GDP will rise to 0.6% above the previouspolicy baseline (see chart, maroon line). Over this period, the boost to GDP growth is between 0.1 and 0.3 percentage point per year and, with actual GDP rising more than potential GDP, the unemployment rate will temporarily decline 1/4 percentage point below the baseline, bringing modest additional upward pressure on inflation. Later, as the impetus from the tax cuts dissipates, as higher deficits and debt crowd out private investments and, finally, as the personal provisions of the Act expire, GDP quickly slips back towards the baseline level.

The rest of this piece is organized as follows. First, we describe the major provisions of TCJA. Next, we review the JCT's estimates of the costs, distributional consequences, and macroeconomic impacts of the Act. Then, we develop the framework for our own analysis, paying special attention to investment incentives implied by the business tax cuts. Next, we describe the previouspolicy baseline. Finally, we build and describe an alterative simulation that reflects our estimates of the impact of TCJA on the macroeconomy.

Provisions of the Tax Cut and Jobs Act

Individual Provisions

For many—but not all—individuals, TCJA lowers federal marginal tax rates, while reducing the burden of both the Alternative Minimum Tax (AMT) and estate taxes. It also expands the standard deduction while repealing or curtailing the personal exemption and most personal deductions. Major provisions include:

- There are new tax rates: 10%, 12%, 22%, 24%, 32%, 35%, and 37%; additional detail follows.
- The standard deduction is nearly doubled to \$12,000 for singles, \$24,000 for married couples filing jointly, and \$18,000 for heads of households.
- The personal exemption is repealed.
- A 20% deduction is allowed for income of certain pass-through entities.
- The Child Tax Credit is modified and expanded.
- The exemption and phase-out amounts for the AMT are increased.
- The exemption for estate and gift taxes is doubled.
- Personal taxes are indexed to the chain Consumer Price Index (CPI) rather than the CPI.⁵
- Itemized deductions for taxes are repealed, except for up to \$10,000 in state and local taxes (including both income and property taxes) and interest on mortgage debt up to \$750,000.
- The "individual mandate" for healthcare coverage under the Affordable Care Act is effectively repealed in 2019.6

The personal provisions are effective January 1, 2018 and expire December 31, 2025, with two notable exceptions: the repeal of the individual mandate; and,

⁴ For example, the Administration's budget for FY 2018 shows post-policy GDP growth quickly ramping up to a sustained 3%, 0.6 percentage point above an optimistic (compared to projections prepared by the Congressional Budget Office) baseline growth rate of 2.3%. This is 10 times larger than our estimate of the impact of TCJA! See https:// www.whitehouse.gov/sites/whitehouse.gov/files/omb/ budget/fy2018/ap 2 assumptions.pdf.

⁵ The chain CPI grows roughly 0.2 percentage point slower per year than the CPI because the chain CPI accounts for consumers shifting spending towards items for which relative prices fall. Indexing to the chain CPI rather than the CPI will push taxpayers into higher tax brackets sooner. Since there are more and narrower tax brackets at the low end of the income distribution, over time the new indexing provision will have a disproportionate impact on low-income taxpayers.

⁶ The legal mandate is not repealed, only the financial penalty for not complying with the legal mandate.



the switch to the chain CPI for indexing personal taxes. Both these provisions are permanent.

Business and International Provisions

For corporations, TCJA slashes federal marginal tax rates, allows more generous depreciation allowances, curtails the deduction of business interest expense, and shifts towards a territorial tax system. Major provisions include:

- The top statutory corporate tax rate is lowered from 35% to 21%.
- The corporate AMT is repealed.
- Section 179 (small business) expensing is increased to \$1 million and expanded.
- Full (100%) expensing of (other equipment) is allowed through 2022, but then is phased out by 2027 in equal annual steps of 20%.⁷
- The business deduction for (net) interest expense is limited to 30% of adjusted income.
- There is an 8-year "tax holiday" on repatriated earnings, with a 2-tier rate structure: 8% for illiquid assets, 15.5% for liquid assets.
- Domestic corporations can deduct dividends received from certain foreign affiliates.

Most of the corporate provisions are effective January 1, 2018 and, with the notable exception of the expensing of equipment, are permanent.8 While the business provisions listed above have received much attention, the TCJA also includes several corporate "base broadeners" not listed above that importantly limit the eventual cost of the bill.9

⁷The expensing provision also applies to off-the-shelf pur-

chases of software.

Tax Brackets and Combined Federal-State & **Local Marginal Rates**

The charts below show the new federal tax brackets by taxable income for married couples filing jointly, for heads of households, and for unmarried singles. Married couples filing jointly face lower federal tax rates at almost all income levels, but this is not true for other filers. Heads of households face higher marginal tax rates for incomes between roughly \$150,000 and \$400,000, and singles face higher rates for incomes between roughly \$200,000 and \$400,000.





Tax Brackets, Head of Household, by Income percent



Tax Brackets, Unmarried Single, by Income percent



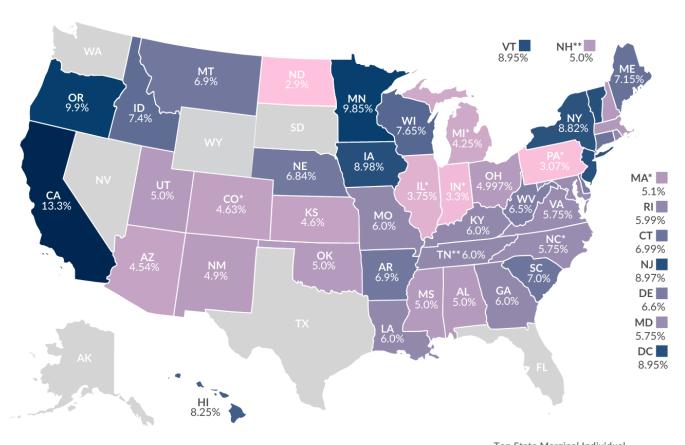
⁸ The expensing provision for equipment is effective retroactive to September 28, 2017.

⁹These include modifying the treatment of net operating losses and the amortization of expenditures on research and development, as well as the curtailment of a laundry list of business-related deductions.



How High Are Income Tax Rates in Your State?

Top State Marginal Individual Income Tax Rates, 2016



Note: (*) State has a flat income tax. (**) State also only taxes interest and dividends income. Map shows top marginal rates: the maximum statutory rate in each state. It is not an effective marginal tax rate, which would include the effects of phase-outs of various tax preferences. Local income taxes are not included.

Source: State tax forms and instructions



TAX FOUNDATION

Economic theory emphasizes the role of marginal tax rates in influencing individual behavior. In this regard, however, the rate that matters is a taxpayer's combined federal-state & local marginal rate. Many filers, whose state taxes exceed \$10,000, or who no longer itemize given the near doubling of the standard deduction, will see their combined marginal rate rise. Consider, for example, a married couple filing jointly, with income of \$325,000 that, under previous law, faced the top marginal federal tax rate of 39.6% but claimed the federal deduction for state income taxes. Suppose under TCJA that same household faces the new, lower 37% top federal rate, still itemizes but, at the margin, no longer

enjoys a deduction for state income taxes. It is easy to show that if that taxpayer lives in a state where the top marginal rate exceeds (1-37/39.6)=6.6%, then the taxpayer's combined marginal rate rises. 10 Thirteen states and the District of Columbia, accounting for more than a third of total GDP, have top marginal income tax rates above this cut-off (see map above). California leads the way with a top rate at 13.3%; New York is second with a top rate of 8.82%.

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¹⁰ This calculation ignores any complication arising from the individual AMT.



	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2018-22	2018-27
Individual Tax Reform:												
New tax brackets & rates	-94.1	-135.3	-140.9	-146.4	-152.0	-158.1	-164.3	-171.1	-52.0		-668.7	-1214.2
Nearly double standard deduction	-57.2	-82.6	-84.7	-87.5	-90.7	-92.9	-95.7	-99.1	-30.0		-402.7	-720.4
Double AMT exemption	-6.9	-82.5	-69.9	-74.9	-80.5	-81.6	-85.6	-90.1	-65.2		-314.7	-637.2
Reform child tax credit	-29.3	-63.8	-65.4	-66.6	-67.7	-70	-71.2	-72.3	-37.7		-292.8	-544.0
20% deduction for for pass-thru income	-18.2	-30.9	-32.7	-33.8	-34	-32.6	-33.2	-33.8	-14.9		-149.6	-264.1
Double estate & gift tax exemption	-1.2	-8.1	-8.8	-9.1	-9.6	-10.1	-10.7	-11.1	-11	-3.3	-36.8	-83.0
All other	-6.0	-1.2	1.7	1.9	2.2	2.3	2.4	2.8	1.8	1.5	-1.4	9.4
Index individual provisions to chain CPI	0.8	2.1	5.5	8.2	10.4	12.8	16.6	20	25.6	31.5	27.0	133.5
Reduce ACA subsidies		6.0	9.7	28.4	37.0	40.7	43.5	46.1	49.6	53.3	81.1	314.3
Limit deductions for mortgage interest & SALT	43.5	70.4	72	77.1	82.3	87.9	94	100.2	41.1		345.3	668.5
Repeal personal exemption	93.3	137.1	141.6	146.4	151.8	157.6	163.3	169.2	51.3		670.2	1211.6
TOTAL, Individual Tax Reform	-75.3	-188.8	-171.9	-156.3	-150.8	-144	-140.9	-139.2	-41.4	83.0	-743.1	-1125.6
Business Tax Reform:												
Reduce top corporate rate from 35% to 21%	-101.3	-125.3	-130.5	-131.1	-132.6	-136.2	-140.7	-144.7	-149.7	-156.3	-620.8	-1348.4
Expensing provisions, including Section 179	-37.2	-43.9	-28.7	-16.8	-13.6	-6.4	2.3	7.5	11.6	12.8	-140.2	-112.4
Repeal alternative minimum tax	-6.8	-6.9	-6.6	-6.8	-7	-1.3	-1.3	-1.3	-1.2	-1.1	-34.1	-40.3
Limit interest deduction to 30% of EBITA	8.4	17.7	19.7	19.6	24.9	30.2	29.6	31.8	34.7	36.9	90.3	253.5
All other base broadening	7.6	24.6	33.2	42.6	77.9	97.3	94.2	82.6	76.2	58.3	185.9	594.5
TOTAL, Business Tax Reform	-129.3	-133.8	-112.9	-92.5	-50.4	-16.4	-15.9	-24.1	-28.4	-49.4	-518.9	-653.1
International Tax Reform:												
Repatriation tax holiday	78.6	49.6	16.5	15.6	15.7	27.2	47.5	64.4	33	-9.4	176.0	338.7
Other	-9.7	-7	9.5	12.4	7.2	-4.7	-10.8	-15.7	-3.9	8.6	12.4	-14.1
TOTAL, International Tax Reform	68.9	42.6	26	28	22.9	22.5	36.7	48.7	29.1	-0.8	188.4	324.6
GRAND TOTAL	-135.7	-280.0	-258.8	-220.8	-178.3	-137.9	-120.1	-114.6	-40.7	32.8	-1073.6	-1454.1

Source: Joint Committee on Taxation; Macroeconomic Advisers by IHS Markit

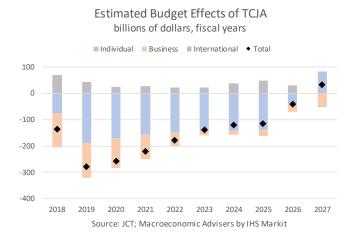
Not to make too fine a point of these calculations, which vary greatly with the circumstances and location of the taxpayer. However, economic theory places considerable importance on the role of marginal tax rates in incenting work, saving, and investment, and proponents of TCJA tout the incentive effects of the reduction in federal marginal rates. We wish only to emphasize that when gauging incentive effects, all provisions of TCJA need be considered, and that doing so at least partially undermines inferences based solely on the changes to federal tax rates.

Joint Tax Committee Analysis

The Conventional Score

The conventional or "static" score of the TCJA prepared by the Joint Committee on Taxation (JCT) is summarized in the chart to the right. 11 Additional detail is provided in Table 1, grouped by individual and business provisions and, within each group, from the most

to the least costly over the 10-year scoring window. For example, the most expensive provision affecting individual income taxes is the reduction in personal tax rates, which loses \$1,214 billion of revenue through FY 2027. At the other extreme, the repeal of the person exemption raises \$1,212 billion over 10 years. The 10year cost of all the individual provisions is \$1,126 billion. Note, however, that by FY 2027, after the sunset of the personal tax cuts, the surviving individual provisions (the repeal of the ACA mandate and the switch from the CPI to the chain CPI) reduces the deficit by \$83 billion.



¹¹ See "Estimated Budget Effects of the Conference Agreement for H.R.1, "The Tax Cuts and Jobs Act" (Joint Committee on Taxation; December 18, 2017); https://www.jct.gov/ publications.html?func=startdown&id=5053. In the JCT's conventional score, no allowance is made for <u>macro</u>economic effects. It is, however, somewhat misleading to refer to that score as "static" since the JCT does allow for a variety of microeconomic induced effects.



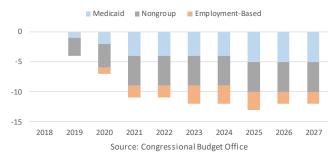


By far the costliest business provision is the reduction in the statutory corporate tax rate to 21%. It loses \$1,348 billion of revenue over 10 years, and no other provision costs even one tenth as much. Less widely reported is that, because some corporate provisions (expensing) are temporary, and because TCJA does include base-broadening provisions, by FY 2027 the business provisions lose only \$49 billion, so that the overall effect of TCJA is to reduce the deficit modestly in FY 2027 and following years.

This turnaround was necessary to comply with the Senate's "Byrd rule" under which legislation passed using the budget reconciliation process, and hence requiring only a simple majority vote in the Senate, cannot contribute significantly to the budget deficit beyond the 10-year scoring window. Cynics have been quick to suggest that provisions slated to sunset under TCJA will in fact be extended by subsequent legislation, as happened with portions of the "Bush tax cuts", leading to perpetually higher deficits and adding far more to the national debt than shown in the JCT analysis.

Note the chart (and table) is titled "Budget Effects" not "Revenue Effects." That is because several of the individual provisions trigger significant changes in federal direct spending for subsidies and refundable credits.¹² For example, the modification of the child credit raises outlays (mostly for refundable credits) by \$135 billion through 2027. Most importantly, the repeal of the ACA individual mandate lowers outlays (mostly) for healthcare subsidies and Medicaid benefits by \$297 billion through 2027 because, according to the Con-





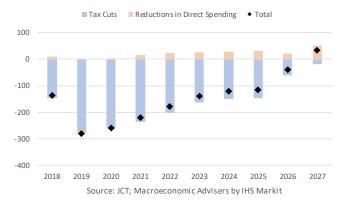
 $[\]overline{^{12}}$ The JCT's decomposition of the budget effects of TCJA into the effects on revenues and direct spending are shown in the footnotes to the JCT score.

gressional Budget Office (CBO), the number of persons with healthcare coverage will drop more than 10 million by 2021 (see lower-left chart). 13 Those monies were available to reduce taxes by that amount while keeping the total cost of TCJA within the 10-yer limit set by the Budget Resolution. The lower-right chart shows the JCT's decomposition of the budget effects of TCJA into the tax cuts and reductions in direct spending.

Distributional Impacts

As part of its analysis, the JCT also computes the implication of the law for the distribution of tax changes. One slice of this analysis is presented in Table 2 for three years — 2019, 2025, and 2027 — and displayed graphically in the lower-left chart on the next page. 14 In 2019, the first "full" year of the law, 15 taxpayers in all income classes will, on average, see a reduction in their average tax rates, although those reductions grow with income and, for taxpayers with incomes above \$200,000, are nearly 5 times larger than for taxpayers with incomes below \$30,000 (the green bars in the chart). By 2027, however, the situation is quite different. Taxpayers with incomes below \$75,000 will see their average tax rates rise, having lost the subsidies

Estimated Budget Effects of TCJA billions of dollars, fiscal years



¹³ See "Repealing the Individual Health Insurance Mandate: An Updated Estimate (Congressional Budget Office; November 2017); https://www.cbo.gov/publication/53300.

¹⁴ See "Distributional Effects of the Conference Agreement" for H.R.1, The Tax Cuts and Jobs Act (Joint Committee on Taxation; December 18, 2017); https://www.jct.gov/ publications.html?func=startdown&id=5054.

¹⁵ As noted earlier, the individual mandate is not repealed until 2019.

Table 2. Average Tax Rates by Income Category, the Tax Cuts and Jobs Act	
percentage points	

	Cal	endar Year	2019	Cal	endar Year 2	025	Calendar Year 2027			
Income Category	TC.IA Difference		Previous Law	TCJA	TCJA Difference		Previous Law TCJA			
< \$10K	9.1	8.6	-0.5	5.8	6.1	0.3	4.7	5.1	0.4	
\$10K - \$20K	-0.7	-1.2	-0.5	-1.1	-0.4	0.7	-0.8	0.7	1.5	
\$20K - \$30K	3.9	3.4	-0.5	3.8	4.2	0.4	4.1	5.1	1.0	
\$30K - \$40K	7.9	7.0	-0.9	7.5	7.5	0.0	7.6	8.3	0.7	
\$40K - \$50K	10.9	9.9	-1.0	10.9	10.6	-0.3	11.0	11.5	0.5	
\$50K - \$75K	14.8	13.5	-1.3	14.5	13.9	-0.6	14.5	14.6	0.1	
\$75K - \$100K	17.0	15.6	-1.4	16.5	15.7	-0.8	16.3	16.3	0.0	
\$100K - \$200K	20.9	19.4	-1.5	20.7	19.9	-0.8	20.7	20.6	-0.1	
\$200K - \$500K	26.4	23.9	-2.5	26.5	25.1	-1.4	26.6	26.4	-0.2	
\$500K - \$1M	30.9	27.8	-3.1	30.8	29.3	-1.5	30.8	30.5	-0.3	
> \$1M	32.5	30.2	-2.3	32.1	31.5	-0.6	32.1	31.7	-0.4	

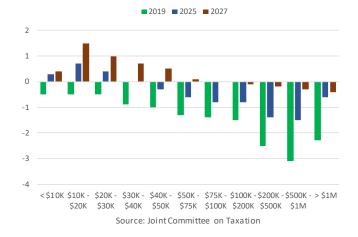
Source: Joint Committee on Taxation

and refundable credits associated with the ACA and facing tax brackets that have, for a decade, been indexed to the chain CPI rather than the CPI. Taxpayers with incomes above \$100,000 will still see slight declines in their average tax rates, primarily through their ownership, as shareholders, of after-tax corporate earnings (the maroon bars in the chart). In this sense, permanent corporate tax cuts are paid for by a permanent increase in burdens on lower-income taxpayers.

The Dynamic Score

For legislation of this magnitude, the JCT must also produce a macroeconomic analysis that includes a point estimate of feedback effects on deficits and the debt. 16 In preparing this analysis, the Committee averages results from three macroeconomic models that differ with respect to scope and, to a certain degree,

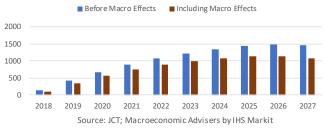
Change in Average Personal Tax Rate by Income percentage points



underlying theoretical paradigm. The lower-right chart compares the "static" estimate of the impact of TCJA on the federal debt to the corresponding "dynamic" estimate. Under conventional scoring rules, by FY 2027 the debt rises \$1,454 billion relative to the baseline; under the dynamic analysis, debt rises a lesser \$1,069 billion. Thus, the JCT concluded that the legislation will generate enough additional income and revenues to pay for about one fourth of the static cost.

The JCT did not report annual estimates of the impact of TCJA on key macroeconomic indicators. However, the Committee does report that under TCJA: (a) the level of real GDP will, on average through 2027, be 0.7 percent above the baseline; (b) but, by 2027, the level of GDP will be only 0.1 to 0.2 percent above the baseline. Hence, the JCT estimates that the impact of TCJA on the 10-year compound annual growth of real GDP is





¹⁶ See "Macroeconomic Analysis of the Conference Agreement for H.R.1, The Tax Cuts and Jobs Act (Joint Committee on Taxation; December 22, 2017); https://www.jct.gov/ publications.html?func=startdown&id=5055.





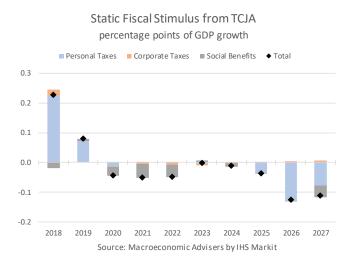
less than 2 basis points per year! Furthermore, the Committee's estimates imply that, under TCJA, GDP growth initially will be higher than the baseline—we can surmise by several tenths of percent per year for several years—but that eventually growth will drop below the baseline. 17 This pattern emerges, as shown below, in our own analysis.

PAY-GO Waived

Under usual PAY-GO rules, the 10-year budget shortfall shown by the JCT would have required an offsetting, legislated combination of increases in taxes and cuts in non-exempt mandatory outlays or, absent such legislation, an across-the-board sequestration of those mandatory outlays. And, since the President signed the TCJA without any such offsets in 2017, sequestration would have occurred in 2018 with the potential to overwhelm any near-term fiscal stimulus associated with TCJA. However, as part of the Continuing Resolution (CR) that kept the government operating beyond December 9, Congress waived the application of the PAY-GO rule to TCJA, thereby avoiding those spending cuts.

Towards Our Own Analysis: Static Fiscal Stimulus

To shape a preliminary assessment of the macroeconomic impact of the Act we start with a simple calculation of static fiscal stimulus. The computation is as follows. First, JCT's conventional estimates of the budgetary effects of TCJA are allocated across personal taxes, corporate taxes, and government social benefits as defined in the National Income and Product Accounts (NIPAs). Next, these are converted from a fiscal-year to a calendar-year basis. Then, each component is assigned a 1-year "marginal propensity to spend" roughly consistent with parameters in our macroeconomic model.¹⁸ Finally, combining these propensities with the calendar year "swings" in revenues and spending implied by the JCT score, we compute the corresponding impact on the change in aggregate demand and nor-



malize it to percentage points of GDP growth through division by the baseline level of GDP.

This calculation is shown in the chart above. It suggests an impact on growth of around 1/4 percentage point in 2018, assuming economic agents respond promptly to the new tax code on January 1. In 2019, the impact drops below 0.1 percentage point of growth, followed by several years of modestly negative effects through 2025. Then, in 2026 and 2027, when individual provisions and the expensing of equipment expire, the effect turns more sharply negative—a "fiscal cliff" that may later be eliminated by legislation extending the tax cuts but, as it is approached, is bound to create legislative, and hence economic, uncertainty.

This calculation is admittedly stylized. It doesn't allow for multiplier effects. It ignores monetary policy and hence the possibility of either a monetary response, or a reaction in financial markets, to the fiscal stimulus. It is an estimate of the impact on aggregate demand only, whereas proponents of TCJA argue that the reduction in marginal tax rates will spur growth in potential GDP from the "supply side" of the economy. Nevertheless, this measure is a useful point of reference because it reveals tendencies and magnitudes that also are apparent in the fuller analysis, to which we now turn.

The Guidance of Conventional Thinking

Before moving on to a full-blown simulation exercise, it is worthwhile considering several themes suggested for the analysis by economic orthodoxy.

¹⁷ The JCT reports that this reversal arises not only because provisions of TCJA expire, but also because the extra accumulation of debt eventually "crowds out" some private sector investment.

¹⁸ The calculation also allows for the leakage of domestic demand into imports that undermines stimulus to GDP.





First, in the long run, (potential) GDP is determined by labor and capital inputs in combination with total factor productivity (TFP). In the standard modeling, (revenue neutral) tax reform can affect a permanent increase in the level of GDP by encouraging an increase in labor supply and / or the capital stock. Taxes usually are thought not to have a measurable impact on TFP. If an increase in the level of GDP occurs over several years, there is a temporary increase in economic growth. However, in the standard modeling, and in notable contrast to the Administration's assumptions, tax reform does not permanently raise economic growth.

Second, there's an important distinction between tax cuts and revenue-neutral tax reform. Tax cuts lower both marginal and average tax rates. While a reduction in marginal rates encourages "substitution effects" towards saving, investment, and labor supply, lower average tax rates generate offsetting "income effects" and raise future deficits that crowd out private investment. Hence, while tax cuts may spur aggregate demand in the short run, their long-run impact on the level of (potential) GDP is generally considered to be negative. Tax reform is generally though to lower marginal but not average tax rates, and so unambiguously encourages the expansion of GDP from the supply side of the economy. While TCJA has elements of reform, it is also a large tax cut. Hence, one might expect an eventual reversal of any initial boost to growth, even if major provisions of TCJA did not expire in later years.

Third, tax cuts can spur a cyclical rise in employment, but when the economy is at full employment the only way tax changes "create jobs" is to encourage an increase in labor supply, either on the intensive margin (by raising the workweek supplied) or the extensive margin (by raising the labor force participation rate). Our reading of the empirical evidence is that aggregate labor supply responds only modestly to persistent changes in marginal tax changes, and that the response is primarily by secondary, low-skilled workers. Hence, in the long run, we would not expect TCJA to result in many additional jobs, even if: (a) the personal provisions did not expire; and (b) there weren't any offsetting income effects on labor supply.

Fourth, initial conditions matter. Tax cuts are more likely to have a large impact on growth when there is slack in the economy to accommodate an increase in aggregate demand. Today the U.S. economy is near full employment, inflation is close to the Federal Reserve's 2% objective, and the Federal Open Market Committee (FOMC) already is removing monetary accommodation as it "normalizes" interest rates and its balance sheet. Given these initial conditions, fiscal stimulus likely will be resisted by monetary tightening that limits any incremental expansion of GDP due to TCJA to the incremental expansion of potential GDP—a smaller impact.

Fifth, the distinction between permanent and temporary also is of potential importance. In the standard modeling, a tax cut that is perceived as temporary is likely to have less of an impact than one that is permanent. Many (individual) provisions of the TCJA expire in 2026. This may be of no short-run consequence for those households that spend all their disposable income. However, for households that save according to a "Life Cycle" or "Permanent Income" model, the temporary nature of the tax cuts should mute their nearterm response unless they fully expect the cuts to be extended by subsequent legislation.

Incentives for Business Investment

TCJA has three provisions especially pertinent to capital spending: the reduction in the statutory, marginal tax rate on corporate income; the expensing of equipment; and, a limitation of the deduction for business interest. Here we discuss how each of these is included in the subsequent analysis.

Marginal Corporate Tax Rate

A popular narrative is that slashing the corporate tax rate to 21% creates a powerful incentive for capital spending, but investment theory is more nuanced. Our modeling of business investment is based on the "neoclassical paradigm" in which the optimal capital stock is inversely related to the Hall-Jorgenson "user cost of capital," q, the formula for which is:

(1)
$$q = \left(\frac{1-\tau z}{1-\tau}\right)[(1-m)r_e + m(r_d(1-\tau)-\pi) + \delta]$$



In (1), τ is the marginal corporate tax rate, z is the present discounted value of depreciation allowances per dollar of investment, m is the proportion of investment that is debt-financed, r_e is the real cost of equity finance, r_d is the nominal cost of debt finance, π is the (expected) inflation rate for capital goods, and δ is the depreciation rate of capital. Note that r_d is adjusted by $1-\tau$ to allow that, under previous law, corporations could fully deduct interest as an operating expense.

The relationship between the user cost and the corporate tax rate is revealed by taking the partial derivative of (1):

(2)
$$\frac{\Delta q/q}{\Delta \tau} = \left(\frac{1}{1-\tau} - \frac{z}{1-\tau z} - \frac{1-\tau z}{1-\tau} \frac{mr_d}{q}\right)$$

from which it follows that a reduction in the tax rate has three different impacts on user cost. By increasing the after-tax return on the marginal dollar of gross revenue earned by capital, the reduction in τ lowers the user cost—the first term in the parentheses on the right-hand side of (2). However, the decline in the tax rate also reduces the tax value of deductions for depreciation and interest, tending to increase the user cost the last two terms in the parentheses. Hence, the net impact on the user cost—and investment incentives—is ambiguous in sign, depending on how quickly the investment is depreciated and the extent to which it is debt-financed. For an equity-financed investment the cost falls with the tax rate. However, for investments that are short-lived and partly financed with debt, the user cost can rise. The overall effect on the user cost of capital, and hence investment incentives, thus depends on the mix of investments and the method of finance.

Expensing of Equipment

In expression (1), expensing is equivalent to setting z = 1. All else equal, this reduces the user cost and encourages investment in equipment, but there is reason to expect the impact on investment to be modest.

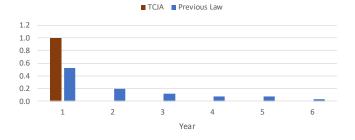
First, under Section 179 of the IRS code, "small business" investment in equipment already is fully expensed.

Second, under previous law, the portion of equipment not fully expensed under Section 179 was eligible for "bonus depreciation" which, in 2018, would have allowed 40% of an investment to be expensed with the remaining 60% capitalized according to the Modified Accelerated Cost Recovery System (MACRS). 19

Third, expensing pulls forward to the time of purchase depreciation write-offs that would otherwise have been claimed in later years. Hence, the gain from expensing is the tax value of the resulting increase in the present value of depreciation allowances. This is small for short-lived equipment. In addition, in the current environment of low inflation and, hence, low nominal interest rates, the cost of deferring depreciation write-offs, and hence the advantage of expensing, is low.

As an example, consider an investment in equipment that, under MACRS, has a service life of 5 years. Under TCJA, this investment is fully expensed. Under previous law, in 2018 the first 40% of the investment would have been expensed and the remaining 60% depreciated using the double-declining-balance method with an optimally timed switch to the straight-line method. The chart below compares the two patterns of depreciation.²⁰ The present value of expensing under TCJA is, obviously, 1. Computed using the pre-tax Treasury





¹⁹ Bonus depreciation was implemented as a provision of the "Protecting Americans from Tax Hikes Act of 2015" (PATH). Under PATH, 40% of most equipment could have been expensed in 2018, 30% in 2019 and then 0% in 2020. For some longer-lived asserts and aircraft, the bonus period extended an extra year.

²⁰ The example assumes the asset is put in place at mid-year and so is subject to the "half-year convention" under MACRS quidelines.



yield curve as the discount function, 21 the present value of depreciation allowances under the previous law is 98 cents, a difference of 2 cents. Evaluated at the previous 35% corporate tax rate, the difference in after-tax value is only 0.07 cents; evaluated at the new 21% corporate rate, the difference in tax value is a smaller 0.04 cents.²²

The gains would be smaller still for 3-year equipment, although larger for longer-lived equipment. Hence, while the incentives appear modest, they will favor long-lived over short-lived investments. In addition, over time the advantage of expensing will grow, for two reasons. First, the baseline assumes previous law under which bonus expensing was to be phased out gradually, so the difference between TCJA and previous law expands to a maximum in 2020 before then declining as the expensing provision in TCJA is phased out after 2022. Second, in the baseline, interest rates rise as the FOMC removes monetary accommodation. As rates rise, so also does the cost of deferring depreciation write-offs or, conversely, the more advantageous expensing becomes. This suggests our analysis should show a growing impact of expensing on investment, at least until the phase-out of expensing begins in 2023.

There is also an important interplay between expensing and the corporate rate that should be recognized. Under expensing, with z = 1, expression (2) collapses to:

$$(3) \qquad \frac{\Delta q/q}{\Delta \tau} = -\frac{mr_d}{q} < 0$$

which is unambiguously negative if the investment is partly debt-financed. That is, if, in the "stacking order" of potential incentives, the analysis first considers full expensing—which, as mentioned above, does reduce the cost of capital—then subsequently lowering the marginal tax rate raises the user cost of capital by reducing the tax value of the interest deduction. Only when expensing is phasing out could the lower tax rate become a positive incentive for investment, and only

then depending on the type of investment and the means of financing it.

Limiting the Deduction for Business Interest

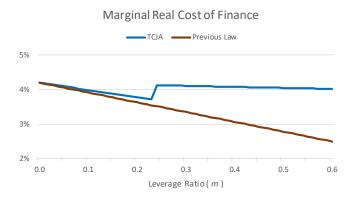
Under previous law, firms could deduct all interest as a business expense. Under TCJA, the deduction for interest is limited to 30% of adjusted taxable income, defined for this purpose as the sum of pre-tax profits and interest expense. For a corporation with interest expense below this threshold, the limitation is of no consequence. Firms with interest expense above this threshold may experience significant increases in user cost. To see this, consider the term inside expression (1) for the real marginal cost of finance, c_i itself a weighted average of the real marginal costs of equity and debt:

(4)
$$c = (1 - m)r_e + m(r_d(1 - \tau) - \pi)$$

The maroon line in the chart below depicts, under previous law, the relationship between this marginal financing cost and the leverage ratio given the recent marginal costs of debt and equity. Since equity finance is more expensive than debt finance, and because debt was subsidized, the marginal financing cost declined steadily as leverage increased. Under TCJA, the marginal financing cost has a discontinuity at some threshold leverage ratio, γ , above which the tax subsidy is lost:

(5)
$$(1-m)r_e + m(r_d(1-\tau)-\pi) \qquad m < \gamma$$

$$(5) \qquad c = (1-m)r_e + (m-\gamma)(r_d-\pi) \qquad m > \gamma$$



²¹ That is, the depreciation write-off one year hence is discounted using the 1-year Treasury yield; the write-off two years hence is discounted using the 2-year Treasury yield; etc.

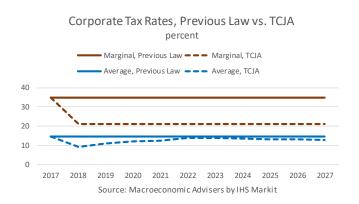
²² The differences would be smaller still if an after-tax discount rate were used to compute the present values.



This relationship is shown in the chart as the blue line. At the threshold leverage ratio, which we estimate to be roughly $\gamma = .24$, the function shifts up and its slope flattens. For firms with leverage ratios above 0.24, the marginal cost of finance rises notably under TCJA, creating an incentive to disinvest in debt-financed capital. We do not, however, expect firms to react to this provision by cutting capital expenditures as much as implied by the increase in cost at prevailing leverage ratios. More likely is that firms will reduce leverage in an effort offset the cost of the limitation of the interest deduction. Over time, one could witness a bunching of leverage ratios just below the threshold. Nevertheless, the shift towards equity finance will raise marginal financing costs and, all else, discourage investment relative to the baseline.

<u>Investment and the Average Tax Rate?</u>

Neoclassical theory focuses on the role of marginal incentives, and hence the marginal corporate tax rate, but that theory assumes that investment is infinitely divisible so that capital projects are pursued to the margin where economic rents are driven to zero. In the real world, however, investment projects are lumpy, so there may be unexploited inframarginal projects with positive net present values. There is a strain in the investment literature arguing that, under this assumption, the average corporate tax rate also matters for investment decisions. The intuition is that the average rate influences whether and where a project is done, while the marginal rate determines the size of the project. In that case, a reduction in the average corporate rate could lead to more investment, and perhaps more investment in the United States.



The TCJA slashes the marginal corporate rate 14 percentage points, but what about the average, or effective, rate? In our baseline, the average federal corporate rate is 14.7%.²³ To calculate the TCJA alternative, we relied on the JCT score but excluded both the revenues raised by the repatriation tax holiday, on the grounds that these are deferred taxes on past revenues generated by existing capital, and the cost of expensing, on the grounds rounds that it is temporary and that, in any event, mainly an intertemporal shift in tax liability. The resulting calculation is shown in the nearby chart. It suggests that initially the average corporate rate drops fairly sharply, from the baseline value of 14.7% to slightly less than 10% in 2018, mainly because the marginal rate is slashed. Over time, however, as the offsetting impact of other base-broadening provisions grows, the average rate rises back much closer to the baseline value.

While the empirical literature linking investment to average tax rates is not rich, it seems doubtful that such a modest long-run reduction in the average tax rate would either precipitate a large surge in domestic investment or encourage a wholesale shift of foreign direct investment towards the U.S. This is especially true given that, while the U.S. statutory corporate tax rate was high relative to statutory rates in other counties, the U.S. effective corporate rate was relatively low.

Labor Supply

Suppose labor supply, L, depends positively on the real, after-tax wage rate (a substitution effect) and negatively upon after-tax income (an income effect), and that income is itself the product of the real wage, w, and labor supply.

(6)
$$\log(L) = \alpha \log(w(1-\mu)) - \beta \log(wL(1-\overline{u}))$$

Here, μ is the marginal tax rate on wages and $\bar{\mu}$ is the average tax rate. Suppose further that, as we believe, the substitution and income elasticities are of comparable magnitude. Upon re-arrangement, (6) becomes:24

²³ This is computed as corporate profits taxes other than taxes paid by the Federal Reserve divided by corporate profits before tax other than Federal Reserve profits.

²⁴ For expositional simplicity we've use the approximation that $\log (1 - \mu) \approx -\mu$ for small μ ; likewise for $\bar{\mu}$.



(7)
$$\log(L) \approx \frac{\beta}{1+\beta} (\overline{\mu} - \mu)$$

which implies that a reduction in the average tax rate reduces labor supply while a reduction in the marginal tax rate raises labor supply. Under TCJA both the average and marginal rates on labor income fall, but only temporarily, so there can be no lasting increase in labor supply. Hence, other than the potential for a temporary boost in employment, the Tax Cuts and Jobs Act will not "create jobs" in the long run. Furthermore, our estimates are that through 2025 both the average and marginal rates fall by comparable magnitudes so that even over the first 8 years we would not expect the TCJA to encourage a notable change in labor supply relative to the baseline. Accordingly, we expect any increase in potential GDP to come mainly through any expansion of the capital stock encouraged by the investment incentives in the Act.

Housing

TCJA likely will prove negative for residential construction. Indeed, arguably one of the goals of tax reformers, even if imperfectly embodied in TCJA, is to reduce tax subsidies for housing in order to shift resources away from residential investment towards business fixed investment. There should be little impact on household formations—which we view as determined primarily by slow-changing demographics and employment opportunities for persons under the age of 30 and hence no lasting impact on the number of units constructed. However, in response to the reduced tax subsidies, the real value per unit constructed, and hence the real value of construction put in place, should decline relative to the baseline.

For homeowners who itemize their deductions, the deduction for mortgage interest is capped at mortgage debt of \$750,000 and the deduction for property taxes is capped at \$10,000. There will occur sharp jumps in the marginal after-tax cost of housing at these two thresholds. In addition, these homeowners may claim their deductions at lower marginal tax rates than under previous law, further undermining the value of the deductions and so raising the after-tax cost of housing.

Just as important, given the expansion of the standard deduction under TCJA, there will be large numbers of homeowners who no longer itemize and so who will face the full pre-tax mortgage and property tax rates when judging the after-tax cost of the marginal dollar spent on homeownership. For these homeowners the impact on the marginal cost of housing is dramatic. For example, consider a homeowner in Saint Louis County who, under previous law, faced a 39.6% federal marginal tax rate federal, a 6% marginal state tax rate, and a 1.4% property tax rate. At the current mortgage rate of around 4%, and assuming a home that is 80% debtfinanced, the marginal after-tax cost of housing (excluding depreciation) was 4.0% + 1.4% - .456* (0.8*4% + 1.4%) = 3.3%. Under TCJA, if this homeowner no longer itemizes, the marginal cost jumps to 4.0% + 1.4% = 5.4%, a startling increase of 63%.

The result of these cost increases should be a shift in tenure choice away from homeownership towards renting, and from construction of single-family units to multi-units. Since rental units tend to be smaller (and part of multi-family projects), the effect will be to reduce the value of construction put in place for a given number of units constructed. Demand will shift towards smaller owner-occupied homes as well, with similar implications for the value of construction. House prices are likely to weaken as the negative impact of higher marginal costs on housing demand will be only partly offset by the positive effects on demand of higher after-tax incomes. The softening in price will be larger for expensive homes and in high-tax states.

The Previous-Policy Baseline

In preparation for our simulation analysis we first updated our previous-policy baseline to reflect all information available to us shortly before TCJA was enacted. In this baseline real GDP growth is modestly above the current 2% "trend" through 2020, pushing the unemployment rate to a cycle-low of 3.7% in 2019, a full percentage point below the Non-Accelerating Inflation Rate of Unemployment (NAIRU). With labor markets tight and tightening, and with inflation expectations anchored at the FOMC's 2% objective, core PCE inflation rises gradually through 2% to reach 2.3% in 2020 before ebbing to 2% as growth slows and the unem-





ployment rate rises gradually to the NAIRU by 2026. The baseline assumes CBO-like assumptions for federal outlays and pre-TCJA tax policy, rather than pre-TCJA tax law, with the notable exception of bonus depreciation, which is assumed to phase out by 2020 as previously scheduled. Given the undershoot on unemployment, and the overshoot on inflation, the FOMC is assumed to raise the federal funds rate to 31/4% by 2021, above the long-run equilibrium rate of 23/4%, before allowing it to settle at the equilibrium level by 2026. Long-term yields gradually rise, not only in anticipation of rising short-term interest rates but also as the FOMC passively allows the Fed's balance sheet to run off, putting upward pressure on term premiums along the Treasury yield curve.

Building the TCJA Simulation

We first converted JCT's static score of TCJA from a fiscal year to a calendar year basis, ²⁵ and then allocated the calendar-year effects on revenues and outlays across National Income & Product Account (NIPA) concepts of federal personal current taxes, taxes on corporate income, federal capital transfer receipts, and federal government social benefits.²⁶ Then, with Treasury yields held along the baseline path:

- (1) The statutory federal corporate marginal tax rate was reduced from 35% to 21% starting in 2018.
- (2) Depreciation schedules for equipment were reset, first to raise the present value of depreciation allowances for equipment to 1 through 2022, but then to phase out expensing by 2027.
- (3) The aggregate leverage ratio was reduced to generate an increase of roughly 20 basis point in the weighted-average cost of finance.

- (4) The marginal tax rate on wage income was reduced through 2025.
- (5) The average federal and personal and corporate tax rates were adjusted down to reflect the static revenue losses estimated by the JCT.
- (6) Federal transfer payments, including Medicaid grants to states, were lowered to reflect the JCT/CBO estimates of the impact of TCJA on federal direct spending. Since Medicaid is a matching program, it was also necessary to reduce state & local medical transfers to persons by about 40% more than the reduction in federal Medicaid payments to the states.

After simulating the effects of these changes and reviewing the results, we settled judgmentally on a monetary response that raised the federal funds rate roughly 25 basis points above the baseline path from late 2018 through mid-2023, with an eventual return of the funds rate to the baseline path. This also raised 10year monetary policy expectations, and hence the 10year Treasury note yield, by roughly 15 basis point in 2108-19, but lesser, decreasing amounts thereafter.

The simulation was also modified for several special considerations. First, ordinarily our model would show households (and firms) responding to the tax changes as of their effective date, January 1. In reality, Congress passed TCJA late in the year amidst uncertainty about the implications of the Act and, indeed, whether it would even pass in the Senate. Now, employees must file new W-4 forms with their employers and the IRS must issue new withholding rates to allow employers to adjust amounts withheld from workers' paychecks. These tables reportedly will be available in February, but it is likely to take months for these changes to be implemented in full. Indeed, given the complexity of the Act, many taxpayers may not gain a full understanding of its financial ramifications until filing taxes in the spring of 2019. Accordingly, we delayed part of the modeled initial impact on consumer spending, shifting some of the effect from the first half of 2018 to later this year and into 2019.

Second, equity markets have moved up sharply since the 2016 presidential election and some of that gain likely was in anticipation of now-realized cuts in corporate taxes. Therefore, to the extent that, with a lag, ear-

²⁵ This adjustment is necessary to arrive at the proper calendar year "run rates" of the tax cuts. This is especially important for 2018, when the fiscal year estimates must be multiplied by 4/3 to allow that, with the exception of expensing, provisions of TCJA are in effect for only the last three quarters of FY 2018.

²⁶ In the NIPAs, estate and gift taxes are treated as capital transfers, not personal current taxes, while reductions in healthcare subsidies and changes in refundable tax credits are treated as current transfers (of government social benefits) to persons. Finally, while repatriated earnings are from previous, not current, production, the resulting tax collections are included in taxes on corporate income.



lier gains in equity values have generated wealth effects on consumption and encouraged new capital spending, the TCJA already has influenced our baseline forecast. Because our modeling of equities is based partly on past corporate taxes, care was necessary when building the simulation not to double-count any boost to aggregate demand coming by way of equity valuations. Therefore, we assumed that the "static" impact on equity values of lower corporate taxes was fully "priced in" by the time TCJA was enacted in December.

<u>Third</u>, as argued above, TCJA should lead to some softening in house prices. Because our modeling does not explicitly capture this effect, after some off-line calculations, we imposed on the simulation a lower path of house prices that, by 2020, fell 1.5% below the baseline path, before then largely reversing by 2027.

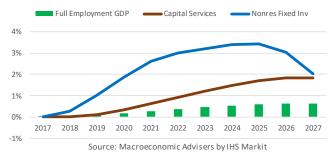
Finally, our simulation assumes that individual provisions of the TCJA expire as legislated. This creates a notable slowdown in GDP growth in 2026 and 2027 that pushes the unemployment rate above the baseline path. We've retained this feature of the simulation not because we necessarily expect that outcome, but as a reminder that TCJA creates a "fiscal cliff" that poses an eventual legislative challenge and implies mounting fiscal policy uncertainty as 2026 approaches. In our next long-term forecast, we likely will assume that many provisions of TCJA are extended, but that a period of gradual fiscal retrenchment will follow.

Results

Potential or "Full Employment" Output

The impact of TCJA on the level of potential or fullemployment real GDP is depicted by the green col-

Real FE GDP, Nonres Fixed Inv & Capital Services percent difference from baseline level



umns in the lower-left chart. Relative to the baseline, potential GDP gradually rises to roughly 0.6% above the baseline by 2027. As our estimate of the impact of TCJA on labor supply is minimal, the increase in potential GDP is attributable almost entirely to a 2% increase in capital services (maroon line in chart) that itself results from an increase in nonresidential fixed investment (blue line in chart) that peaks at 3.5% in 2025, before starting to fade as the expensing of equipment is phased out. Hence, on the supply side of the economy, TCJA raises the growth of potential output by about 6 basis points per year through 2027.

Aggregate Demand

The macro impacts are summarized in the nearby charts with details in Table 3. Through 2021, TCJA raises annual GDP growth by between 0.1 and 0.3 percentage point. The impact is larger in 2019 than in 2018 because in 2019 the catch-up in consumer spending is re-enforced by the growing impact on business fixed investment, especially from the expensing provisions that gain importance as bonus depreciation is phased out of the baseline. After 2025, when most individual provision of TCJA sunset and expensing is phasing out, growth slows below the baseline by as much as 0.4 percentage point.

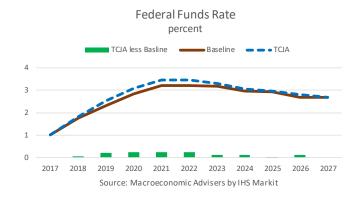
Early on, the unemployment rate falls below the baseline by as much as 0.3 percentage point to cycle-low of 3.6%, the lowest unemployment rate since early 1969. Initially, given modest upward pressure on the dollar, core PCE inflation falls slightly below the baseline path. However, with the tightening of labor markets, inflation eventually moves above the baseline by about 0.1 percentage point, from 2021 through 2023, before that differential recedes. With lower unemployment and higher inflation, and given its dual mandate, the FOMC tightens monetary policy as described above, and long-term yields temporarily rise accordingly.

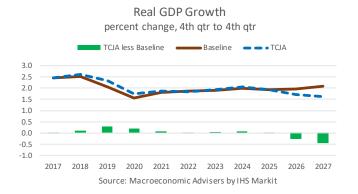
Federal budget deficits are larger through 2027, with the biggest impact (\$274 billion) coming in 2019 before the effects fade. Under TCJA, we project the unified budget deficit to exceed \$1 trillion in fiscal year 2020, the largest deficit since 2012. However, unlike the deficit in 2012, which, with unemployment still elevated following the Great Recession, had a large cyclical

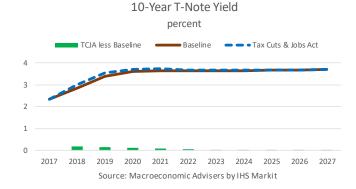


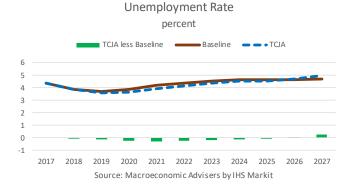


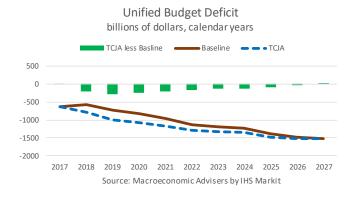
component, the deficit in 2020 will come with the economy arguably beyond full employment and so be entirely structural in nature. The cumulative increase in the debt by 2027 is \$1.7 trillion. The current account deficit also widens as nearly 40% of the extra federal deficits through 2027 are financed with saving from the rest of the world.

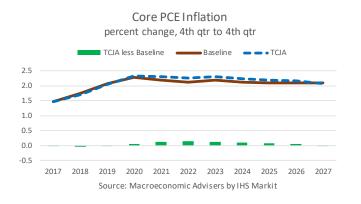


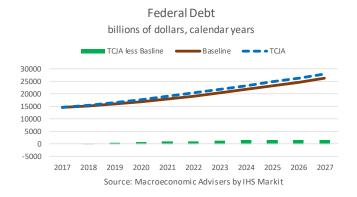








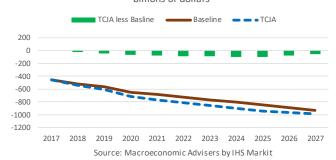








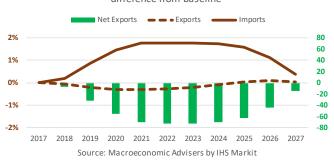
Current Account Deficit billions of dollars



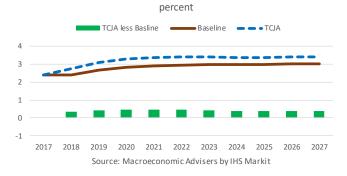
Real PCE & Residential Investment percent difference from baseline



Real Net Exports difference from baseline



Marginal Cost of Finance





	<u>2017</u>	<u>2018</u>	<u>2019</u>	2020	<u>2021</u>	2022	<u>2023</u>	2024	2025	<u>2026</u>	2027
Real GDP Growth (%, 4th / 4th)											
Baseline	2.47	2.52	2.07	1.57	1.80	1.88	1.90	2.00	1.94	1.98	2.07
Tax Cuts & Jobs Act	2.47	2.63	2.35	1.76	1.87	1.85	1.93	2.07	1.94	1.73	1.61
TCJA less Baseline	0.00	0.11	0.28	0.19	0.07	-0.03	0.03	0.07	-0.01	-0.25	-0.46
Real GDP Growth (%, Y / Y)											
Baseline	2.25	2.60	2.30	1.74	1.66	1.88	1.87	1.95	1.99	1.96	2.03
Tax Cuts & Jobs Act	2.25	2.66	2.53	1.96	1.78	1.89	1.87	2.01	2.02	1.79	1.64
TCJA less Baseline	0.00	0.06	0.23	0.22	0.12	0.00	0.00	0.06	0.03	-0.16	-0.39
Unemployment Rate (%)											
Baseline	4.4	3.9	3.7	3.9	4.2	4.4	4.6	4.6	4.6	4.7	4.7
Tax Cuts & Jobs Act	4.4	3.9	3.6	3.6	3.9	4.2	4.4	4.5	4.6	4.7	5.0
TCJA less Baseline	0.0	0.0	-0.1	-0.2	-0.3	-0.2	-0.2	-0.1	-0.1	0.0	0.3
Core PCE Inflation (%, 4th / 4th)											
Baseline	1.5	1.7	2.1	2.3	2.2	2.1	2.2	2.1	2.1	2.1	2.1
Tax Cuts & Jobs Act	1.5	1.7	2.1	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1
TCJA less Baseline	0.00	-0.05	-0.02	0.05	0.11	0.14	0.13	0.10	0.09	0.06	-0.02
Federal Funds Rate (%)											
Baseline	1.00	1.76	2.33	2.84	3.20	3.20	3.19	2.95	2.94	2.70	2.70
Tax Cuts & Jobs Act	1.00	1.82	2.52	3.09	3.45	3.45	3.31	3.06	2.95	2.81	2.70
TCJA less Baseline	0.00	0.06	0.20	0.25	0.25	0.25	0.12	0.11	0.01	0.11	0.00
10-Year T-Note Yield (%)											
Baseline	2.33	2.84	3.39	3.60	3.64	3.63	3.64	3.65	3.66	3.68	3.70
Tax Cuts & Jobs Act	2.33	3.01	3.54	3.72	3.72	3.69	3.67	3.67	3.68	3.69	3.70
TCJA less Baseline	0.00	0.17	0.15	0.12	0.09	0.06	0.03	0.02	0.02	0.01	0.00
Broad, Nominal Dollar											
Baseline	122.3	122.3	122.7	121.3	120.9	121.0	121.2	121.5	122.0	122.2	122.3
Tax Cuts & Jobs Act	122.3	122.7	123.7	122.3	121.8	121.5	121.4	121.5	121.7	121.8	121.9
TCJA less Baseline	0.00%	0.36%	0.77%	0.83%	0.68%	0.45%	0.20%	-0.04%	-0.24%	-0.34%	-0.32%
Unified Budget Deficit (billions)											
Baseline	-632	-573	-724	-820	-967	-1126	-1194	-1225	-1382	-1488	-1520
Tax Cuts & Jobs Act	-632	-780	-998	-1071	-1174	-1285	-1329	-1348	-1479	-1523	-1517
TCJA less Baseline	0	-207	-274	-251	-208	-159	-135	-123	-97	-34	3
Federal Debt (billions)											
Baseline	14565	15274	16061	16952	17985	19175	20461	21790	23253	24779	26376
Tax Cuts & Jobs Act	14565	15429	16505	17692	18979	20364	21809	23281	24860	26448	28055
TCJA less Baseline	0	155	444	740	994	1188	1349	1490	1607	1669	1679
Current Account Deficit (billions)											
Baseline	-459	-524	-565	-648	-685	-727	-766	-804	-843	-884	-935
Tax Cuts & Jobs Act	-459	-541	-607	-712	-764	-813	-856	-899	-938	-964	-984
TCJA less Baseline	0	-17	-42	-64	-80	-86	-90	-95	-95	-80	-49

Source: Macroeconomic Advisers by IHS Markit



Table 3 (Continued	\ Maaraaaaanamia	Imposto of the	Tay Cute and	laha Aat
Table 3 (Continued	i. Macroeconomic	impacts of the	Tax Guis and	JODS ACL

	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	2022	2023	<u>2024</u>	<u>2025</u>	<u>2026</u>	2027
Real GDP											
Baseline	17092	17535	17939	18250	18553	18902	19256	19632	20023	20415	20829
Tax Cuts & Jobs Act	17092	17546	17990	18342	18669	19021	19377	19767	20165	20527	20864
TCJA less Baseline	0.00%	0.06%	0.28%	0.50%	0.62%	0.63%	0.63%	0.68%	0.71%	0.55%	0.17%
Full Employment Real GDP											
Baseline	17112	17399	17754	18122	18477	18847	19232	19621	20013	20420	20840
Tax Cuts & Jobs Act	17112	17402	17768	18151	18525	18915	19318	19726	20133	20550	20971
TCJA less Baseline	0.00%	0.02%	0.08%	0.16%	0.26%	0.36%	0.45%	0.53%	0.60%	0.64%	0.63%
Capital Services											
Baseline	7.49	7.72	7.96	8.21	8.45	8.70	8.93	9.17	9.41	9.65	9.90
Tax Cuts & Jobs Act	7.49	7.72	7.97	8.24	8.51	8.78	9.04	9.31	9.57	9.83	10.09
TCJA less Baseline	0.00%	0.02%	0.12%	0.33%	0.62%	0.92%	1.20%	1.46%	1.69%	1.84%	1.84%
Nonresidential Fixed Investment											
Baseline	2316	2440	2568	2665	2741	2816	2884	2954	3031	3110	3195
Tax Cuts & Jobs Act	2316	2446	2594	2715	2813	2900	2977	3055	3135	3204	3259
TCJA less Baseline	0.00%	0.27%	1.01%	1.88%	2.61%	2.99%	3.22%	3.41%	3.43%	3.02%	2.02%
Pers Consumption Expenditures											
Baseline	11883	12188	12446	12679	12914	13193	13502	13813	14123	14449	14791
Tax Cuts & Jobs Act	11883	12206	12514	12786	13038	13312	13612	13917	14215	14505	14783
TCJA less Baseline	0.00%	0.15%	0.55%	0.85%	0.96%	0.90%	0.82%	0.75%	0.65%	0.39%	-0.05%
Residential Investment											
Baseline	597	612	630	656	677	696	695	700	711	709	706
Tax Cuts & Jobs Act	597	605	616	641	663	683	687	702	722	722	713
TCJA less Baseline	0.00%	-1.17%	-2.29%	-2.35%	- 2.07%	-1.76%	-1.15%	0.30%	1.55%	1.75%	1.03%
Exports											
Baseline	2192	2318	2441	2572	2692	2798	2896	2988	3076	3164	3255
Tax Cuts & Jobs Act	2192	2317	2436	2564	2684	2790	2890	2985	3077	3167	3256
TCJA less Baseline	0.00%	-0.05%	-0.20%	-0.30%	-0.32%	-0.28%	-0.20%	-0.09%	0.03%	0.08%	0.05%
Imports											
Baseline	2810	2977	3136	3323	3486	3643	3781	3903	4021	4135	4248
Tax Cuts & Jobs Act	2810	2983	3163	3371	3548	3707	3847	3972	4085	4182	4265
TCJA less Baseline	0.00%	0.21%	0.88%	1.46%	1.76%	1.78%	1.76%	1.75%	1.59%	1.13%	0.38%
Net Exports											
Baseline	-618	-659	-694	-751	-794	-845	-885	-916	-945	-971	-994
Tax Cuts & Jobs Act	-618	-666	-727	-807	-864	-918	-957	-987	-1008	-1015	-1008
TCJA less Baseline	0	-7	-32	-56	-70	-73	-72	-71	-63	-44	-15
Marginal Cost of Finance											
Baseline	2.40	2.39	2.67	2.83	2.90	2.94	2.97	2.98	2.99	3.00	3.01
Tax Cuts & Jobs Act	2.40	2.73	3.09	3.28	3.36	3.39	3.39	3.38	3.38	3.39	3.41
TCJA less Baseline	0.00	0.34	0.42	0.45	0.46	0.45	0.42	0.39	0.38	0.38	0.40

Source: Macroeconomic Advisers by IHS Markit



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